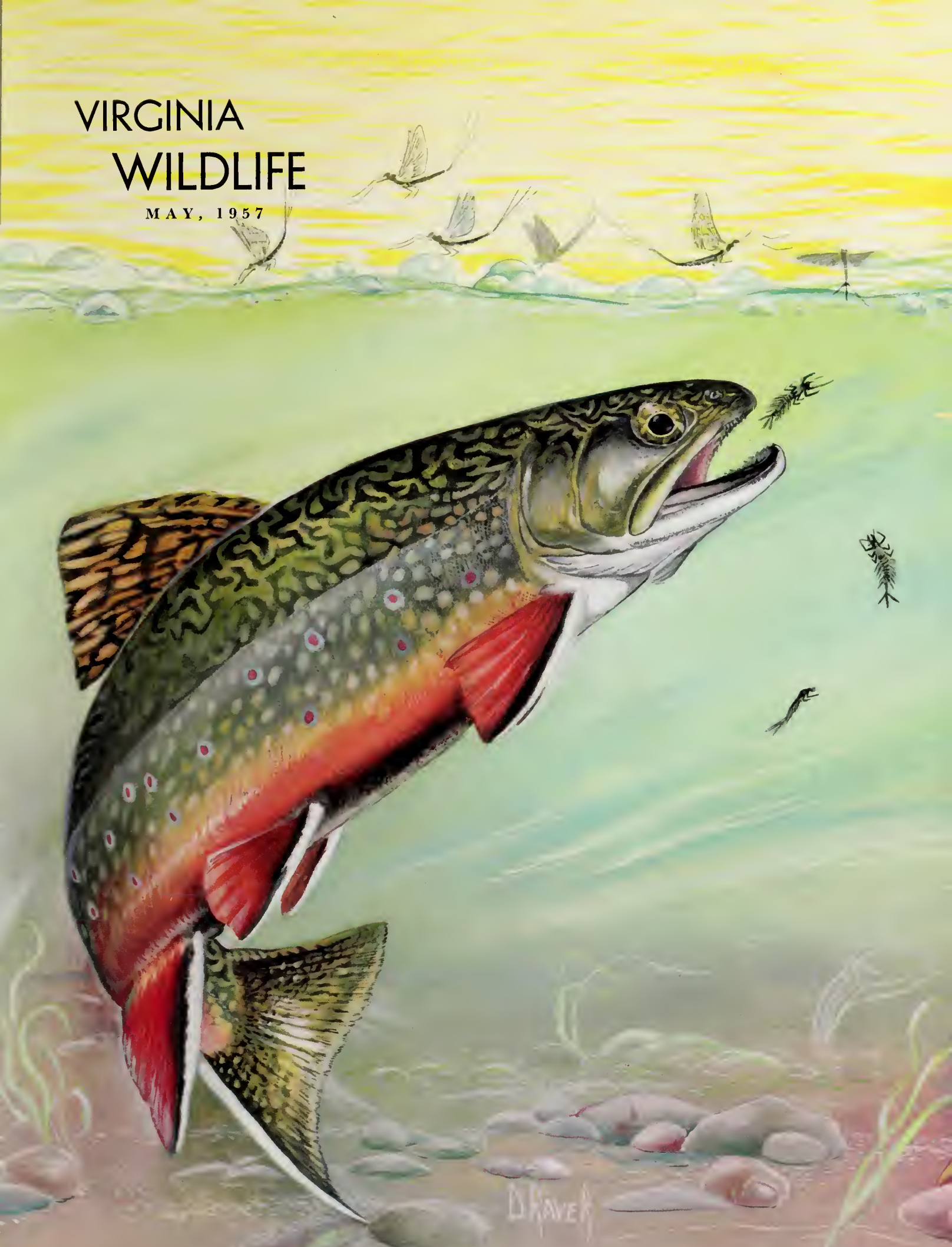
VIRGINIA WILDLIFE

MAY, 1957



VOLUME XVIII *Price 15 cents* NUMBER 5

U. S. Fish and Wildlife Service Photo by Pearson

The eastern mourning dove . . . nests widely throughout Virginia.

VIRGINIA WILDLIFE

Published by VIRGINIA COMMISSION OF GAME AND INLAND FISHERIES, Richmond 13, Virginia

A Monthly Magazine Dedicated to the Conservation, Restoration, and Wise Use of Virginia's Wildlife and Related Natural Resources, and to the Betterment of Hunting and Fishing in Virginia

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Cover

The rainbow trout (*Salmo gairdenerii* Richardson) was originally a native of the Pacific coast. Today, as a result of transplanting, it is found throughout the trout waters of Virginia's mountain ranges. This beautiful painting is by Duane Raver, Jr., of Cary, North Carolina.

PUBLICATION OFFICE: Commission of Game and Inland Fisheries, 7 North Second Street, Richmond 13, Virginia

W. C. KELLNER, *Acting Editor*

L. G. KESTELOO, *Photography*

FLORENCE BLANKENSHIP, *Circulation*

SUBSCRIPTIONS: One Year, $1.00; two years, $1.50; three years, $2.00. Remittances by check or money order to be made payable to the Treasurer of Virginia. Local game wardens will accept subscriptions or they may be forwarded direct to Commission of Game and Inland Fisheries, 7 North Second Street, Richmond 13, Virginia.

VIRGINIA WILDLIFE is published monthly at Richmond 13, Virginia, by the Commission of Game and Inland Fisheries, 7 North Second Street. All magazine subscriptions, change of address notices, and inquiries should be sent to the Commission, P. O. Box 1642, Richmond, Virginia. The editorial office gratefully receives for publication news items, articles, photographs, and sketches, of good quality, and other materials which deal with the wise use and management and study of Virginia's inter-related, renewable resources: soils, water, forests and wildlife. Because of pressure of editorial duties, however, the Commission cannot be held responsible for unsolicited manuscripts and illustrative material. Since wildlife is a beneficiary of the work done by state and federal land-use agencies in Virginia, editorial policy provides for full recognition of their accomplishments and solicitations of their contributions. Credit is given on material published. Permission to reprint is granted provided proper credit is given the Virginia Commission of Game and Inland Fisheries and VIRGINIA WILDLIFE and proper clearances are made with authors, photographers, artists and publishers.

Second-class mail privileges authorized at Richmond, Va. Additional entry Baltimore, Md., July 1, 1956.

The Progressions of Spring

SPRING arrives early in the Southland. Dawn breaks noticeably sooner and shadows of dusk seem postponed for hours. For our latitude, the precise moment of arrival this year was calculated for 4:17 p.m. on the afternoon of March 20. So, officially, spring has been with us for some weeks. Seasons, however, never consult a time piece and over the years will vary considerably as to the actual arrival of seasonal weather. Virginia's terrain and distances—from sea level on the Atlantic coast to high mountains some 300 miles west, rising to altitudes of 5,719 feet—spread the beauty of spring over a considerable period. It is usually three weeks late at places like Mountain Lake in Giles County, Mount Rogers on the county line between Grayson and Smyth counties, and the lower Canadian zone of Highland County.

Spring is a time of reawakening and, outdoors, Nature seems a bit restless; as if flexing her cramped muscles to get along with the pleasant task of painting a bright new landscape. Tree buds have swollen almost to the exploding point on mountains and ridges. In the lowlands the leaves on trees and other plants are new and perfectly patterned—some delicately seriated, others with smooth clean lines; each species with its own design. As yet, they haven't been lashed by summer storm or chewed by insect pest. On the forest floor the fiddle heads of ferns unfold. In a wooded dell, the always wrinkled morel mushrooms push up through the gradually warming earth. A lacy leaf canopy covers bare winter branches and the whole countryside takes on a fresh "new look." Here, early mating birds are staking out their nesting territories and a late arrival will be dive bombed and strafed for daring to fly through this sacred zone, whether such flight was accidental or to contest the territorial domain.

Over in the marsh, the spring peeper (*Hyla crucifer*), so named because of the perfect cross on its back, was one of the early frogs to fill the night air with an evening song. In late April, the common toad added his trilling voice to the chorus. By May the mating songs of other amphibians complete the choir and practicing fills the night. Their songs are enjoyed by all but are perhaps most appreciated by others of their own kind.

This is the season of activity for tillers of the soil. They are the grassroots of conservation, lifeblood of our nation as they carry out winter-made plans for the sowing and planting of seeds; seeds that will miraculously germinate, unfold and grow into life-sustaining foods. Manna for man, his domestic beast and wild animal life. The clean smell of new-turned sod, the drone of a honey bee, sparkling dew on a daisy petal . . . evidences that spring is with us. The earth seems literally to spring to life. By May every living thing is reaching skyward, bending toward a place in the rays of the life-giving sun.

Poets, small boys, lovers, fishermen are all associated with this season of year, but certainly it is a time close to the heart of the true conservationist. Seeding time is a time to heal the ugly scars of erosion, a time to plant food and cover for wildlife. It is the time to keep cats and dogs from running at large. They are natural predators and are death to baby cottontails, unhatched quail and pregnant doe deer. It is also fire season. A carelessly tossed match or cigarette sometimes starts a forest fire that will do more damage in hours than Nature can repair in decades.

Spring is a time for man to lend Nature a helping hand; to work with, not against her; to build, not destroy. John Milton, even in the seventeenth century, must have understood the plan of conservation when he wrote *"Accuse not Nature! She hath done her part. Do thou but thine!"* Our natural resources are the base of our national strength. We have squandered them rapidly since 1607; now the pressure is telling. The various conservation agencies are fighting to stem the tide. Is the pendulum swinging to the right in some areas? I think so. Today fields seem greener, fruit trees are covered with pastel blossoms and on the skyline second-growth forests stand, almost fully clothed, where once was denuded timberland. Yes, indications from the out-of-doors point to the fact that spring is progressing nicely across the Old Dominion.—W. C. K.

"The year's at the spring
And day's at the morn;
Morning's at seven;
The hill-side's dew-pearled;
The lark's on the wing;
The snail's on the thorn;
God's in his heaven—
All's right with the world!"

—Robert Browning
from PIPPA PASSES

"I dream'd that as I wander'd by the way
Bare Winter suddenly was changed to Spring
And gentle odours led my steps astray,
Mix'd with a sound of waters murmuring
Along a shelving bank of turf, which lay
Under a copse, and hardly dared to fling
Its green arms around the bosom of the stream,
But kiss'd it and then fled, as thou mightest in dream."

P. B. Shelley
from "A DREAM OF THE UNKNOWN"

Game Commission Photo by Kesteloo

Leaders in the resource field must have a broad concept of the basic fundamentals of conservation. In the present period we need trained knowledge and skill more than ever before. The commissioners, executive director and assistant executive director of the Virginia Commission of Game and Inland Fisheries, shown above, exemplify such leadership.

Professional Leadership in Conservation

By EDWARD H. GRAHAM
Head, Plant Technology Division
Soil Conservation Service

AS THE Soil Conservation Society of America enters its second decade, it seems fitting and proper that we take note of our opportunities for professional leadership.

One of the unique features of our Society is that there is no single profession characteristic of its activities and objectives. Those prepared for careers in agronomy, wildlife management, soil science, soil conservation, forestry, range management, engineering, hydrology, economics, and other subjects relating to natural resources are members of the Society. Anyone engaged in an occupation in which he practices or advances the science and art of good land use has a place here.

Through our Society we can provide broad professional leadership in conservation. We are already doing this through the *Journal* and other Society publications, Society committees, and chapter activities. I should like to point to further action.

Need Integrated Program

Let me first give two examples that illustrate the need for broad leadership in conservation.

(1) Today there are increasing demands that administration of natural resource programs be so coordinated that duplication, overlapping, and waste be reduced to a minimum. These demands are heard at local, state and national levels. In local communities, soil conservation districts and watershed organizations are striving for integrated programs. State governments are studying their natural resource activities and some states have reorganized to permit coordinated effort. As a result of reviews of the federal government, changes have been undertaken in the administration of some of those departments and agencies that deal with natural resources.

All of these actions indicate the need for closer coordination—coordination that can best be achieved when those engaged in it possess knowledge and appreciation of the resource management job as a whole.

(2) There is need for broad leadership, also, if we are to resolve conflicting demands for the use of land. The individual land operator is today faced with decisions as to whether it is best to use his land for cultivated crops, grass, trees, wildlife, or other productive purposes. Watershed activities are pointing up community values of land for flood prevention, recreation, and other purposes apart from its value to the individual. We hear a good deal now about conflicts between public and private use of land. For example, should high-class farmlands be converted to highways and airports, or migratory waterfowl areas be drained for cultivation? Within the past decade, suburban and industrial developments have absorbed great acreages of good agricultural land. In some

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Dr. Graham is president of the Soil Conservation Society of America. This article, reprinted by permission from the *Journal of Soil and Water Conservation*, was given as his presidential address at the eleventh annual meeting of the Society, on October 15, 1956, in Tulsa, Oklahoma.

The professional conservationist of today should have a certain amount of experience in every science or technology that deals with the care and use of the land and land resources. Management of whole watersheds involves many fields of scientific knowledge.

sections this movement has reached alarming proportions and caused zoning, taxation, and statutory changes of perplexing order.

Conflicting demands for land are going to be most reasonably resolved when those who must deal with them have at their command an understanding of the whole problem involved.

To help meet such needs for leadership, the professional conservationist, in whatever specialized field he may function, has a responsibility above and beyond that of the specialty in which he received his major training and gained his primary experience. The engineer who is only an engineer, the forester who is concerned only with trees, the soil scientist who is interested only in soils, and the others whose professional efforts are circumscribed by subject matter lines cannot provide the kind of leadership that is now demanded of them.

We need expert knowledge and skill more than ever before; we need more intensified training of our professional people; and we need men and women experienced in every science and technology that deals with the care and use of the land and land resources. *But such highly trained, experienced personnel must today assume responsibility beyond their specialized capacities.*

Except for an occasional individual, the professional conservationist today is not equipped to help with the solution of such problems as the administration of resource programs or conflicting demands for land. Nor is he very conscious of the social and economic consequences of his specialized activities. He meets such standards only if his scholastic training and his experience have been exceptionally comprehensive, and he has been fortunate enough to work in an organization which has given special attention to coordinated activities. But this combination is as yet all too rare.

To help make it possible for the professional conservationist to exercise proficient leadership in coordinated resource programs, I propose that the Soil Conservation Society of America call for:

(1) broader basic training of professional conservationists, and

(2) coordinated national resource policies for the states and the nation.

With respect to broader basic training, we need the best qualified teachers, scientists, technicians, and administrators in the conservation field that it is possible to produce.

Our problem is to find a way in which the student can be adequately trained in a specialized field and at the same time obtain some knowledge and appreciation of related fields together with a sense of the social significance of his work. For the most part, the graduates of our colleges and universities are not so trained. In fact, the student often emerges with an actual prejudice against any or all subjects not associated with his major field of training. A number of colleges and universities have taken steps to overcome this difficulty, but they are as yet in the minority.

The problem of adequate training is both undergraduate and graduate. During his undergraduate years the resource specialist, in whatever field he may be specializing, should be encouraged to take courses outside his own field, and facilities should permit him to do so. If, for example, he majors in agronomy, he should have courses not only in related subjects, such as soils, animal husbandry, fertilizers, and agricultural economics, but in such subjects as history, literature, ecology, sociology, and political science. Without such broad basic training the student emerges as a technician limited to his own field and unprepared to adequately relate his work to the work of others, or to realize its effect upon the community.

The excuse that there is not time enough for such broad training seems no longer valid. Not time alone, but such barriers as college departmentalization have limited our training. In some schools it is almost forbidden for a student to take a course in a department other than that in which he majors. Our colleges can do something about that.

Although undergraduate training can provide wider opportunities than at present, it must above all prepare a student for employment. To that end the student as an

undergraduate must concentrate his primary efforts in a particular field.

In graduate work there must be opportunity to expand his horizons. Here the barrier of departmentalization should not exist, and the student should find greater freedom of choice in his selection of subjects.

Methods for Broad Training

Opportunities for broad training are in fact now being afforded by such devices as land-use seminars, inter-departmental curricula, and field studies of actual problems. Unfortunately, such efforts are still limited to a few institutions.

A method with much promise is the joint thesis, wherein several students from several departments study a common problem in resource use and make their separate but related contributions to the coordinated recommendations for solution. This technique has the advantage of strengthening a student's specialized training at the same time that it makes him intimately conscious of the whole job to be done. It furthermore prepares him for the kind of task he will meet when he leaves school. Present technicians cannot be justly accused of inability to achieve coordination when their education has given them no training in the subject.

The Soil Conservation Society has not yet taken steps to urge upon our educational institutions the need for broad training of those who plan to make careers in some phase of conservation. It is my suggestion that the National Council establish a permanent committee of the Society for this purpose. I also believe that several chapters are ready to undertake this objective within their states.

Comprehensive Resource Policies

In addition to broad training for conservationists, we also need to create a setting in which they can operate effectively. This brings me to the suggestion of comprehensive state and national policies for renewable natural resources.

It is not surprising that we tend to manage our resources piecemeal. Historically we gave attention to resource management as the need for it developed. Not until after the Homestead Act of 1862 did resources demand national attention.

In 1871 a Fish Commission was founded, which later became the Federal Bureau of Fisheries. It is not part of the Fish and Wildlife Service. The first national park —Yellowstone—was established in 1872. In 1876 the first forestry agent was appointed. The U. S. Geological Survey was organized in 1879, the Division of Irrigation in 1888. The Bureau of Forestry, created in 1898, became the Forest Service in 1905. In 1902 the Federal Reclamation Act was passed. In 1905 the Bureau of Biological Survey was set up, having started as a U. S. D. A. Division of Economic Ornithology and Mammalogy. It is now part of the Fish and Wildlife Service. The National Park Service took shape in 1917. In 1935 the Soil Conservation Service was established, after two years as the Soil Erosion Service. In 1955 the passage of the Small Watershed Protection and Flood Prevention Act for the first time expressed objectives in resource management on a natural area basis, and revealed more clearly than ever before the need for coordination.

Coordinate Agencies

Federal action in behalf of conservation can be matched by action of the states. I sketch the federal history to indicate how existing national authorities for conservation work developed. Responsibility for conservation of our renewable natural resources at the national level still rests essentially with the various agencies originally established to give attention to them.

While efficient management and administration require an arbitrary division of labor, more and more is heard these days about the need to coordinate the efforts of the various agencies that have become responsible for national leadership in natural resource fields.

See Task as a Whole

For the first time in our history, we, as a nation, have come to the place where we can now give attention not only to the separate segments of the conservation job,

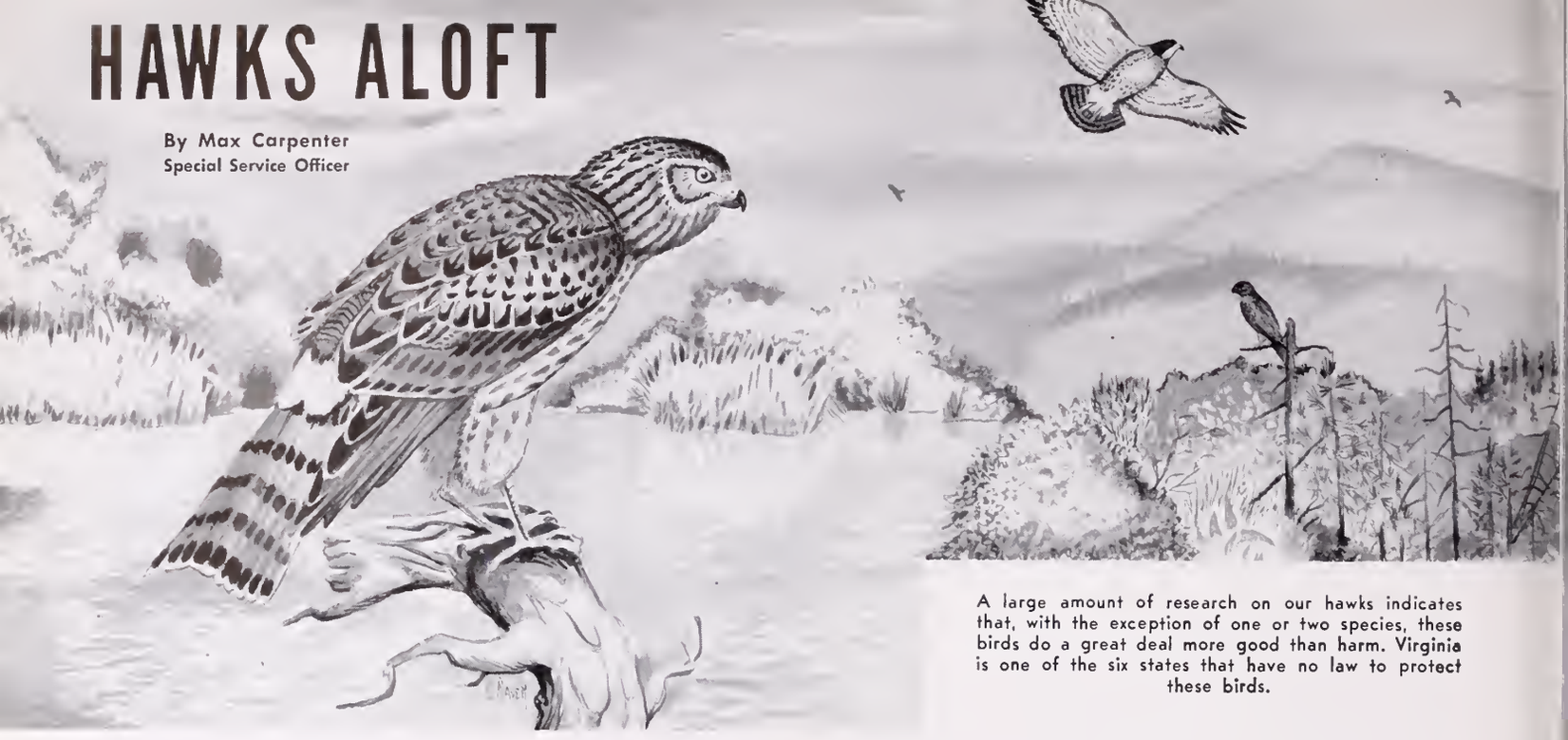
(Continued on page 22)

One of the newer methods of broader training in the conservation field is the joint thesis. Under this plan, students from several departments study a common problem in resource use of a particular area. A project of this type makes a student conscious of the many-sided problems connected with resource management.

U.S. Forest Service Photo

HAWKS ALOFT

By Max Carpenter
Special Service Officer



A large amount of research on our hawks indicates that, with the exception of one or two species, these birds do a great deal more good than harm. Virginia is one of the six states that have no law to protect these birds.

THIS article should be entitled "In Defense of the Hawks" because it is an attempt to show some of the good done by these magnificent birds of prey, as well as to relate some interesting experiences they have afforded us.

Birds of prey have taken a lot of abuse from man. So much so, that they are quite scarce today in many localities. Fortunately, through the educational efforts of the National Audubon Society, the U. S. Fish and Wildlife Service, some state game agencies and local bird organizations, the general public has become aware of the fact that hawks and owls in general are beneficial to man. This trend toward protecting them (unless they are found to be doing damage to poultry or game) has been stepped up by progressive state conservation departments. As of today, only six states fail to protect certain hawks or owls—Arkansas, Georgia, Maryland, New Mexico, Oklahoma and Virginia.

In the 1952 checklist, *The Birds of Virginia,* by Dr. J. J. Murray, fifteen hawks and ten owls are listed as occurring in Virginia. From studies made of the food habits of these birds, as shown in Table I, the good they do more than pays for the harm done by one or two species, as is the case of the Cooper's and sharp-shinned hawks. Even though these two species destroy more birds than rodents, these are not, for the most part, game birds but rather those small birds that must have their population numbers controlled by some force in nature. In fact, this is one good example of nature keeping her animals in balance by having one prey upon another. Without this natural check, some species would multiply beyond all reasonable bounds.

The majority of states have tried to give protection to some hawks and not others. The big objection and drawback of a law of this kind is that, generally speaking, the only people who can distinguish one hawk or owl from another are those who would not shoot them in the first place. For this reason, plus the votes of misinformed people, the hawk law proposed by the Virginia Society of Ornithology and other interested persons did not pass the Virginia legislature in 1955.

In light of the knowledge we have of these "jets" of the bird world, let's get behind such states as Connecticut, Michigan and Indiana, which protect all species of hawks and owls except those doing specific damage to poultry or other domestic animals. Table I shows the food habits of the various species of hawks and backs up the claim that not all birds of prey are bad.

Regardless of how you feel toward the "hawks," it is hard not to admire them for their strength, speed of flight, and keen eyesight. The latter is reported to be equal to man's when he is using 8-power binoculars.

In an effort to map their flight routes, the first large-scale observations of hawk migration were made by members of the U. S. Fish & Wildlife Service and local bird clubs in September 1949. These studies have been conducted annually since then to learn when and where the hawks fly. Once their migration routes are charted, measures can be taken to offer the birds more protection during their fall and spring journeys.

To give you some idea of how many hawks may be seen, one day in 1949 the writer set up watch on Reddish Knob, in Rockingham County, from 11:00 a.m. till 2:00 p.m. and counted 3 Cooper's, 2 red-tailed, 25 red-shouldered, 510 broad-winged, 2 osprey and 93 others too far away to identify—a total of 635 hawks in three hours!

The 1950 study made in Maryland, West Virginia, and Virginia involved a grand total of 9,278 hawks, with the highest number—2,681—recorded at Roaring Plains in West Virginia, from 11:45 a.m. to 3:50 p.m.

In 1955 no concentrated hawk study was made in Virginia. However, the writer counted 204 from High Knob in Rockingham County. Game Warden Corbett saw several hundred from Sounding Knob in Highland County, and Game Manager Grattan Fisher in Alleghany

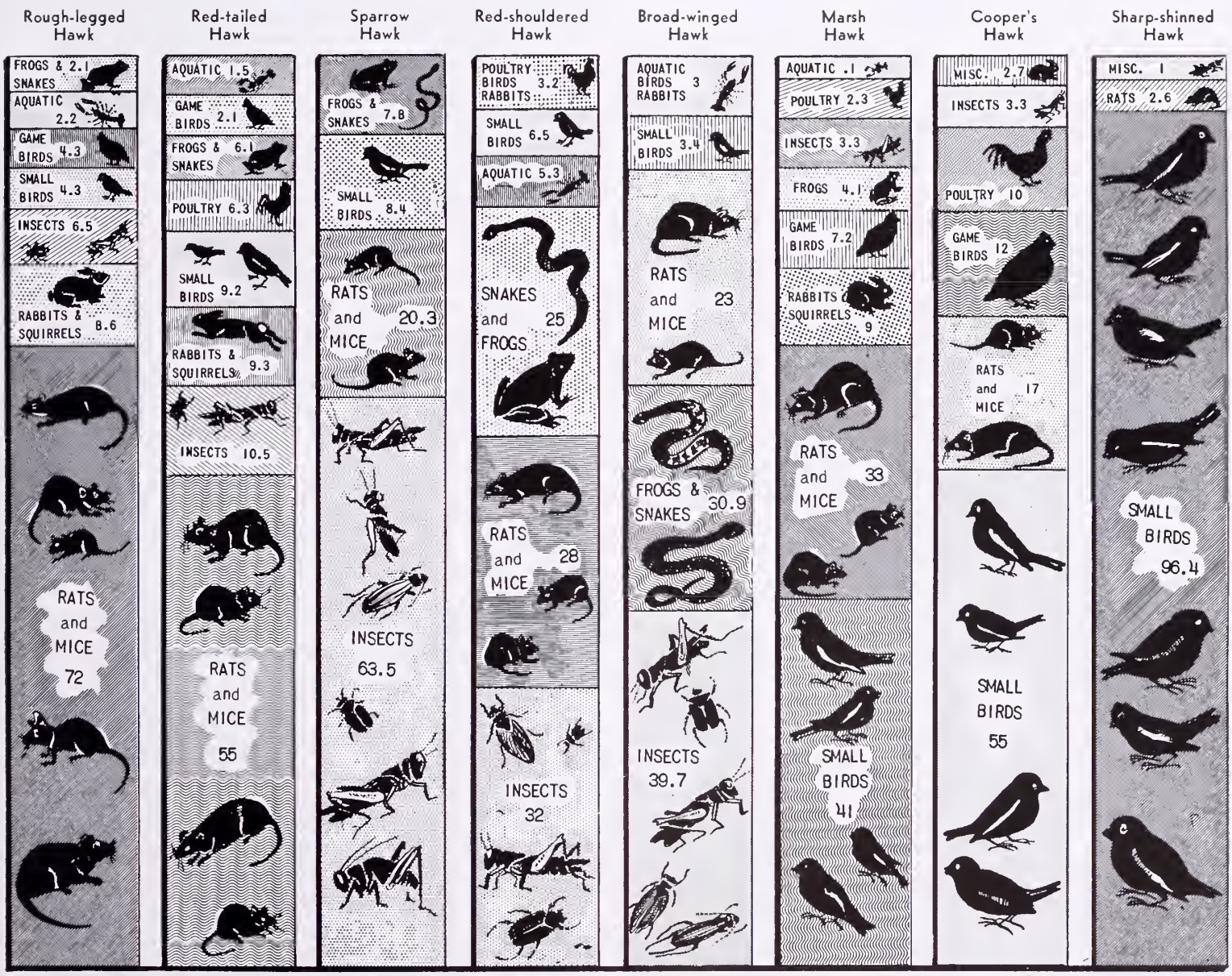
County saw "too many to count" on one of the mountain ridges near Covington.

To experience a truly great phenomenon of nature played by the hawks, one should take station on some high mountain peak around the middle of September. It is at this time that the hawks are migrating to their winter home, and in doing so they follow the main ridges of the mountains where the warm drafts of rising air, called thermal drafts, boost them on their way. If you have never seen a hundred or more hawks in one big soaring flock, you will hardly believe your eyes when you finally do observe such a sight. Fire towers or any prominent ridge or peak make good vantage points. Try to reach your lookout point by 9:00 in the morning, for the hawks fly from that time into the middle of the afternoon. Continual scanning of the sky, both above and below the peak or tower, will add more hawks to your list. Some days they fly low in the valleys; other days they may fly from several hundred to a thousand feet above the ridges, putting them about 5000 feet in the air at some points.

When they are migrating, ten or twelve species of hawks may be seen in one day, but by far the majority seen are of the species called the broad-winged hawk, *Buteo platypterus,* which winters in South America. Most hawks winter in the southern part of the United States and central America, with the exception of the broad-winged and a few red-tailed which go on to South America.

Do not be disappointed if, after climbing all the way to the top of some mountain, you see only five or six hawks, or even none. The slope of the mountain and the direction of the wind determines their flight, so try to choose a clear day with the wind blowing from the north or northeast. But on those days when conditions are right, you can really have a field day with the hawks.

TABLE I



This table is a breakdown of the species of animals commonly eaten by eight of our native hawks. It is interesting to note that the bulk of their diet consists of rodents and insects.

POSTED . . .

For Sportsmen Only

By CHARLES H. PEERY
District Game Biologist

Game Commission Photo by Kesteloo

The Green Spring-Cleveland Wildlife Conservation Association of Washington County has an organization of which its members and the county can be proud. Sportsmen who conduct themselves properly are allowed to hunt the 11,000 acres under the jurisdiction of this organization.

SPORTSMEN, landowners, conservationists! This is a factual story of how a group of Virginia landowners banded together in order to provide sizable hunting grounds for true sportsmen. It is a most commendable and generous act on behalf of wildlife conservation—this provision for hunting recreation on posted land and the betterment of relationships between landowners and sportsmen.

The story concerns the organization and activities of the Green Spring-Cleveland Wildlife Conservation Association in Washington County . . . a story of a group of landowners who organized themselves through the will and enthusiasm of each member and the ingenious leadership of their officers to accomplish the impossible —to allow sportsmen to harvest game from their private lands through restricted measures rather than to completely isolate their 11,000 acres as a refuge, with no hunting allowed.

No individual will take credit for having masterminded this unique organization, but rather each insists that the results have been accomplished through the efforts of all members. The story began in 1949, when at its first meeting on January 25, the association adopted a set of bylaws which have remained in effect since that time, with only slight amendment. Permit a quotation here from Article II, Section (1) of these bylaws: "The purpose of this organization shall be to promote better hunting and fishing, and to propagate desirable species of game and fish in such a way that will be consistent with accepted good farming methods."

The entire membership of the association is restricted to property holders who own land within the defined area, members of their families, and their employees when such employees are engaged in farming. Membership is also voluntary, and there is no fee for such. It is interesting to note that during the infancy of this organization, some landowners within the area bounds were reluctant to join and have their lands become a part of the "restricted area." In no way were they pressured into accepting membership; and yet, since 1949, the association has grown with leaps and bounds so that today its membership represents eighty-three farms and over seventy-five percent of the land area within the defined boundary.

It is obvious that an organization such as this could not sustain itself without some form of income. While there is no membership fee, voluntary contributions by members far exceed a theoretical per-capita assessment based upon membership. In addition to these contributions, the association engages in various money-making activities, which provide fun and recreation for the members and their families. As an example, it sponsors an oyster supper each year, the proceeds of which go to the treasury. It has sponsored rifle matches on other occasions, limited sometimes to association members only, and again, open to the general public. The ladies and youngsters haven't been neglected in these activities either. Special rifle matches have been held for women and for boys and girls twelve years of age and older. The youngsters were trained in firearm safety, receiving individual instruction from experienced coaches. The sum total of all of these activities brings dad, mom, son and daughter into a closer-knit unity of purpose.

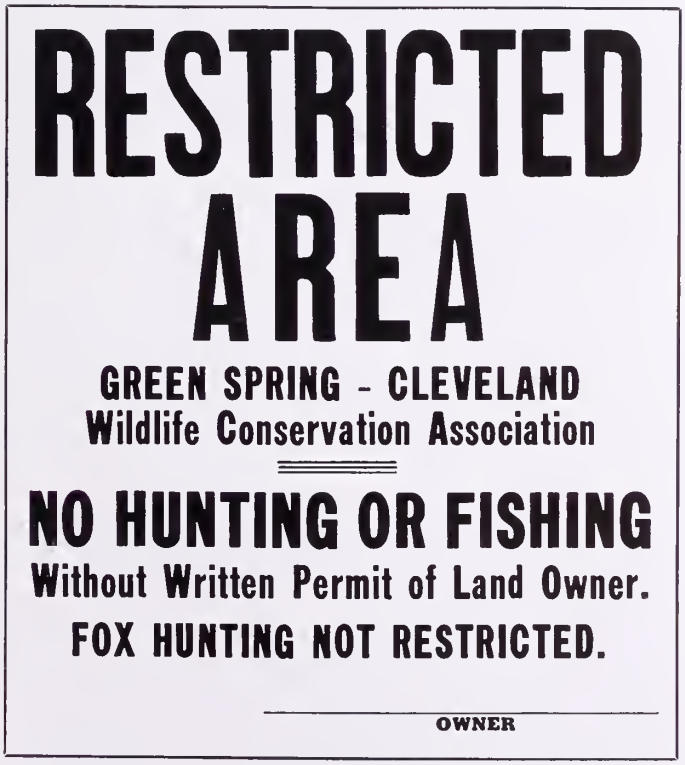
Have you ever heard of a community crow hunt? This organization has conducted two of them already. The 1956 winner killed sixteen crows and was awarded five

dollars for his efforts. What's more, all persons killing crows were awarded one shotgun shell for each bird taken, with the event open to sportsmen from anywhere. And for the past two years, the association has conducted a wildlife feed-strip contest, with ten dollars first prize given for the best strip planted by a senior and junior student, with judging done by a representative of the Commission of Game and Inland Fisheries. Too, the local schools in the community of Green Spring and Cleveland always have entries in the annual wildlife essay contest conducted by the Virginia Game Commission and the Virginia Division of the Izaak Walton League of America. The Green Springs-Cleveland Wildlife Conservation Association sponsors a medal to the author of the best wildlife essay from the local high school.

On two occasions, the association has forwarded questionnaires to its membership requesting a survey of game on their respective land areas. The questionnaire seeks to determine the numbers of quail, rabbits, grouse, squirrel, and deer which reside upon or use the property. The most recent survey was made orally at the annual meeting in November 1955. This report was very encouraging, and indicated that quail and rabbit were present in good numbers just prior to the opening of the hunting season.

To the sportsmen-landowners of Virginia, the ultimate purpose of such an organization is to provide hunting recreation. Here is how it works with the Green Spring-Cleveland Wildlife Conservation Association. At the time of its organization, the association voted to allow each member to issue only four hunting permits per year, each permit good for one person for one day only. In November 1953, the majority of the members saw fit to change this and amended the bylaws to the effect that the individual landowner would determine the number of permits to be issued on his property. With this new system, the landowner was in a better position to balance the demands for the wildlife on his property with the current supply. Today, upon entering the "restricted area" of the association, the eye meets a large sign designating the boundary and with the name of the association on it. Attached along the roads and fence rows, one will observe POSTED signs (see insert), which are furnished by the association at no expense to the member and which bear the signature of the owner of that particular farm. A stranger entering this area will encounter no vicious dogs, nor will he see any landowner marching grimly around with cocked gun. Simply drive up to the house of the owner, present yourself as a gentleman and a sportsman, and you will be greeted almost as a next-door neighbor. To obtain a written permit from the landowner, however, you must agree to the following regulations: (1) leave your automobile in the vicinity of the landowner's house; (2) at the end of the hunt, return your permit to the landowner and allow him to inspect your game bag; (3) obey all county, state and federal hunting laws. Although it's not required by association regulations, a nice gesture is to thank your host for allowing you to hunt on his property and, as a good sportsman, offer some of your game bag.

In these days of greater demands upon our public hunting grounds, most of which do not provide farm-game hunting, what more can a sportsman ask than to have such an organization as the Green Spring-Cleveland Wildlife Conservation Association in existence, ready to meet all sportsmen at least halfway?



Although the land is posted by the association, hunters may obtain written permission to hunt by contacting the landowners. The owners ask only that automobiles be left in the vicinity of their homes, that they be allowed to check hunters' game bags at the end of the day and that all laws pertaining to hunting be obeyed.

Resource Booklets Again Available

The popular booklet *A Look at Virginia's Natural Resources,* which was published by the Virginia Resource Use Education Council in cooperation with the Virginia State Department of Education, is now available in single or quantity orders.

The booklet has special chapters on all of the natural resources of the state—soils, water, forest, wildlife, fisheries and minerals. Each chapter was prepared by the various resource agencies concerned.

Any number of copies may be obtained by writing to Mr. J. Dee Patton, P. O. Box 8745, Richmond 26, Virginia.

Prices of the booklet are as follows:

Number of Copies	Price Per Copy
1	$.30
2-9	.29
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Game Commission Photo by Kesteloo

A bird is truly a unique animal. The feathers which cover its body represent one of the finest engineering and designing feats produced by Nature.

FEATHERS

By ROBERTS MANN
and
WILLIAM J. BEECHER*

"FEATHERS make the bird" is an old saying that is scientifically accurate. Any creature with a body covered by feathers *must* be a bird, but let's take a closer look. Feathers are unique. They represent one of the finest works of design and engineering that Nature has produced.

There is a lot of evidence that birds originated from reptiles. During the Age of Reptiles there was a group of animals called "bird-footed dinosaurs." They ran about on their hind legs, which resembled the legs of modern ostriches, and some of them were no larger than our chickens. It is supposed that birds are descended from this group of reptiles and that, as they became able to fly, their scales gradually changed to feathers. It is not easy to see how a scale could become a light flexible web but the theory is that natural selection, after millions of years, produced the miracle.

All we really know is that one day a strange fossil was found in a limestone quarry at Solenhofen, Bavaria. There, among the remains of dinosaurs buried by silt in a Jurassic sea about 130 million years ago, was a skeleton resembling that of a small dinosaur. But, alongside it were the perfect impressions of wing and tail feathers. This had been a bird! The find was important because it proved what scientists had always believed—that birds came from reptilian ancestors.

If you examine a feather closely through a strong lens or a microscope, you will see that it is an amazing object. For instance, a flight feather of a large bird—like the wing-tip feathers of a turkey—has a hollow tapering shaft that is stiff but flexible. Branching from both sides of this are "barbs." On both sides of each barb are branches fitted with hooks and flanges which interlace so that the barbs are actually "zippered" together. If you poke in one of its feathers, a bird can zip it closed again with a deft touch of the bill. Another important feature is that the feather's web is "cut on the bias." Like a man's woven tie, it stretches in length or width.

The web on one side of the shaft of a flight feather is much narrower than that on the other side. If this were not true, flight would be impossible. In flying, birds do not reach forward with the wings and pull backwards; they do not "row" through the air. The wing stroke is up and down. That carries the bird forward because the broad web at the rear of each flight feather meets more air resistance than the narrow front web, and this causes the feather to rotate slightly in its socket as the wing is raised and lowered—something like the slats on a Venetian blind—downward on the upstroke and upward on the downstroke. You may demonstrate this propeller action by using the cap of a fountain pen as the socket for a large feather and imitating a wing beat.

There are many kinds of feathers and many interesting things to be learned about them. For example, the large flight feathers and tail feathers are covered by much shorter *covert* feathers that serve like shingles on a roof. The *contour* or body feathers grow only on certain parts of the body and are scale like in shape. They shed rain and the air spaces between them insulate the bird. When you see a sparrow sitting all fluffed out on a cold winter morning, he is trapping layers of air inside his feathers to keep him warm.

According to Aristotle, "fine feathers make fine birds." Could be.

*Conservation editor and senior naturalist for the Forest Preserve District of Cook County, Illinois.

VIRGINIA WILDLIFE

CONSERVATIONGRAM

Commission Activities and Late Wildlife News . . . At A Glance

MARSHLAND PURCHASE. Plans are proceeding for the purchase of 4000 acres of marshland on the Eastern Shore of Virginia by the Commission with the aid of Pittman-Robertson funds. These wetlands are intended to be used as a shooting preserve rather than as a refuge. The Commission is interested in acquiring other large tracts of land and would like to receive any information on wetlands which might be available.

WILDLIFE UNIT CONDUCTS CONSERVATION STUDY AT VPI. The Cooperative Wildlife Research Unit at VPI with Robert Giles, a graduate fellow, heading the work is testing school children in grades 6 through 12 for knowledge of conservation. To measure the age level of understanding and to determine from which source the initial understanding is obtained (school courses or youth organizations) are the objectives of the tests. Also, finding the best methods of teaching conservation is a major reason for the project. Seventy schools, with 22,000 pupils participating, are cooperating in this effort to further the work of conservation in Virginia. A full report will be made at the end of the school year, in June. The Commission of Game and Inland Fisheries, the U. S. Fish and Wildlife Service, the Wildlife Management Institute, and Virginia Polytechnic Institute are the four sponsors of the Wildlife Research Unit that is supervising this project.

ESSAY CONTEST WINNERS GUESTS OF COMMISSION. The Commission of Game and Inland Fisheries was host to the top prize winners of the 10th Annual Wildlife Essay Contest on April 26, in Richmond, Virginia. The senior-class winner of the $400 scholarship and the first prize winners of grades 5 through 12, with their families, assembled in the hearing room of the Commission at 8:30 Friday morning. They were welcomed by I. T. Quinn, Executive Director of the Commission, and then taken on a tour of the Capitol Building. Representatives of the Commission, the State Board of Education and members of the Izaak Walton League were in attendance when the awards were presented in the Senate Chamber of the State Capitol. The Executive Director made a brief address in which he emphasized the value of the study of conservation. The students were conducted on a guided tour of historic Richmond, and afterwards were honored guests at a luncheon given by the Commission at the Hotel John Marshall. The day was concluded with an enjoyable color film—the "Canada Goose."

HOG ISLAND WATERFOWL REFUGE. Engineering surveys will be made to determine the location of a large dike which would complete the impoundment of water on Hog Island. Smaller dikes have been constructed over the past two years and seeded to minimize any hurricane damage.

DEER DISEASE STUDY. The Southeastern Association of Game and Fish Commissioners will finance a study for research technicians to determine the nature of an unknown deer disease, which is evident in this section of the country. Headquarters for the work will be at the University of Georgia in the school of veterinary medicine. Although there have been no cases reported in Virginia in the past three years, a highly qualified expert will be available to make field and laboratory tests if necessary.

CLAYTOR LAKE STOCKING. White bass have been captured and put into Claytor Lake to provide additional excellent angling and to begin a fast-growing, prolific species of fish. The white bass averages around one to two pounds, with a maximum weight of four pounds. Plans to stock this game fish have been contemplated for several years, and the Commission reports that 100 more white bass brood fish will be put in the large Pulaski County lake.

WILDLIFE HABITAT IMPROVEMENT. The Commission of Game and Inland Fisheries purchased, in the early spring, materials to use on clearings made in Virginia for wildlife habitat. Among such things as grain, fruit-bearing trees and shrubs, there were included 143 tons of fertilizer and 269 tons of lime. By the use of lime and fertilizer, C. F. Phelps, chief of the game division, stated that the yield of wildlife food had more than doubled.

The hickory shad isn't as tasty as the American or white shad, but when the spring spawning run is on they literally fill some tidal creeks and show plenty of sporting qualities when taken on a light fly rod.

A silver-colored spinner, ahead of beads and a fly, is the most popular bait for shad. Each year more and more fishermen are sport fishing for shad and they like it.

Spring Shad Fishing in Tidewater Virginia

When the spring shad run starts, fishing is fast and furious in the tidal streams that empty into salt water on Virginia's east coast. Sport fishing for both hickory and American shad, an unheard of practice until the last score of years, has recently gained in popularity. Since shad do not feed while in fresh water, it is one of the mysteries of nature why angler succeed in coaxing a shad to strike a small silver spinner or spoon. In 1944 fishermen started taking shad on hook and line, and since that time this new sport fishery has spread. Now anglers catch them by trolling and casting in Virginia's Chickahominy, Mattaponi, Appomattox, Nottoway, Pamunkey and James rivers, as well as in Occoquan Creek.

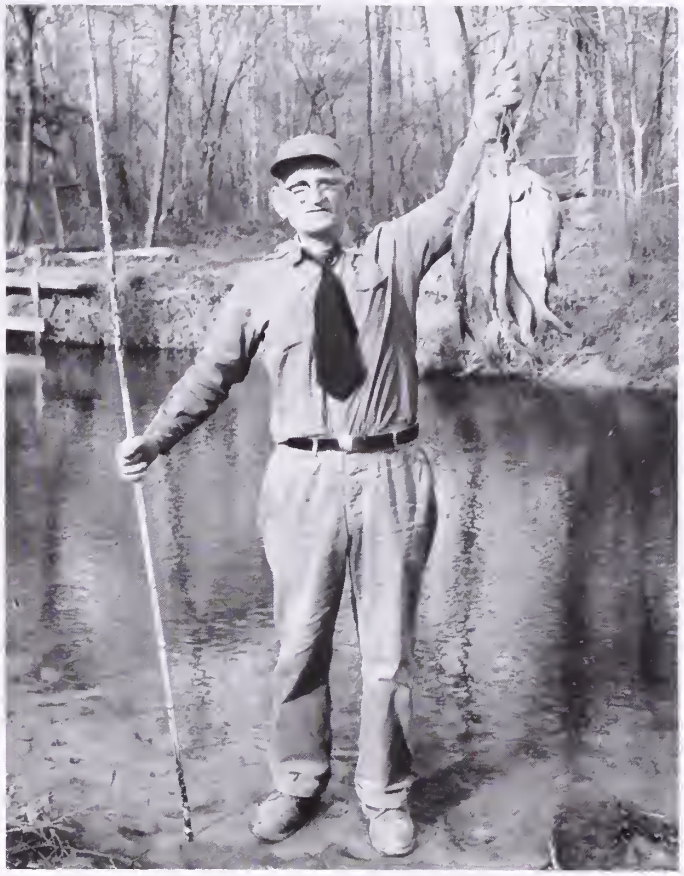
Drift fishing for shad with gill nets has long been popular. It is an interesting method of taking fish but has its share of hard work. The traditional shad bake usually follows a session of gill net fishing. White shad baked on a board is mighty fine food.

Game Commission Photos by Kesteloo

Gill nets for shad are stretched on slack tide. They have been used since colonial days and, along with pound nets, even in commercial fishing have replaced the cumbersome haul seines.

The white or American shad (Alosa sapidissima) is a highly flavored food fish and is the tastiest of all shads. Shad roe is a delicacy at its best when fresh caught.

Hickory shad, alewife, and glut herring look somewhat alike to the novice, and all three are frequently confused with the more highly prized American shad.



Fishermen often salt or pickle their catch of hickory shad. All shad are fun to catch and good to eat when prepared properly. Just ask any shad fisherman.

Modern gill nets are made from fine nylon, and when the shad hits them, its gill covers are caught in the mesh. To remove the fish, it must be pushed forward through the mesh opening.

One big project when the fishing is over is to "clear the net." Tangles and debris must be removed and the mesh repaired to be ready for another day's fishing and another shad bake.

Game Commission Photo by Kesteloo

Spiders do a great deal of good in the home flower garden. A large number of harmful insects are destroyed by these creatures each year.

SPIDERITIS—

A Common Malady

By DAN E. CANTNER
Special Services Officer

THERE is no medical definition for the term, "spideritis," although *itis* is a suffix suggesting an inflammation. It is a coined word used to illustrate a common nervous condition found among many human beings, especially women, whenever they come in contact with a member of the spider clan. Contagious? Definitely! An infected person usually goes all-out to spread the nervous disorder to his uninformed associates, young and old.

Perhaps the greatest single factor contributing to the unwarranted fear is the presence of a much publicized form of spider found principally in the southern part of the country, the black widow, scientifically known as *Latrodectus mactans.* It is a spider which should be handled with caution, although its venom has been fatal only in rare cases. John H. Comstock, in *The Spider Book,* says: "In the North there is no common spider to be feared; in the South there is a single easily recognized species that is believed by some people to be dangerous." The reference, of course, is to the black widow which is coal black with red or yellow or both markings, these markings being in various forms—stripes, dots or in the shape of an hour glass. Black widows are between one fourth of an inch and a half inch in length; weave an unusually coarse web; and are most frequently marked with an hour glass.

Should we condemn *all* spiders because of the danger involved in one easily recognized species? Definitely not. But human beings are strange animals. In a similar way, many condemn *all* snakes although we have only three poisonous species in Virginia. All species of hawks and owls are persecuted because of the misdeeds of a few. Yet we do not condemn the entire human race when one person commits a crime. Why then should we be so unwise in our decisions toward the animals that make up our surroundings?

It is a known fact that all spiders secrete a venom used in capturing their prey. A small amount of this substance, useful for capturing flies or other insects, has little if any effect on human beings.

Summer is a season which introduces many new animals into our everyday experiences. They aren't as conspicuous as game animals, for instance, but they are present and are a part of the scheme of nature. Spiders come into their own during the summer period. The spiders increase in numbers then, just like insects.

Spiders are part of the vast food chain that includes all animal and plant life. They help to control or check the insect population by utilizing them for food. They, in turn, become food for other spiders, small animals and even some insects.

Let us consider spiders in greater detail and learn more about the "spideritis" they cause.

In a sense, spiders are meat-eaters as their diet is made up primarily of insects. The mouth of a spider is constructed in such way as to make chewing impossible for him, so he must take his nourishment in liquid form. Special appendages allow him to extract juices from his victim, the juices being sucked up through the mouth parts where a straining apparatus is present. It consists of fine hairs and prevents solid particles from entering his digestive tract. A large South American tarantula, the bird-spider, with a two inch body and legs seven inches long, has been seen capturing and eating small vertebrate animals in this way.

Spiders use many different techniques in obtaining their food. Some stalk their prey much the same as a man stalks a deer. Others wait in ambush and then at-

tack their prey. Still others construct tunnels and catch their victims as they enter the opening. Many wait in flower blossoms and grab insects as they come to feed on the nectar. The most common trick of all is the construction of a web. The victim hits the web and becomes entangled among its sticky, silk threads. Once an insect is caught, the spider usually injects it with venom as soon as possible. Quite often the victim is then tied down by extra silk spun for the occasion. Some of the smaller spiders use no special equipment for obtaining food, but associate with larger spiders in a commensal fashion. Smaller insects, which are unappetizing to the large spider, are eaten by the small spider living in the same web.

Although most spiders have tremendous appetites, one female, corked in a vial, lived without food for eighteen months. This indicates that food is not entirely essential at regular intervals, at least for some species.

At times spider webs or cobwebs become a problem, especially if they are built by house spiders. They cause no damage, but to a tidy housekeeper the web is as unsightly as a sink full of dirty dishes. A vacuum cleaner or a broom disposes of them, usually. However, if the spider is persistent in rebuilding the web, a spray of .5 percent lindane or a two percent chlordane spray can be applied under furniture, in corners, and around windows and doors.

The majority of spiders travel by means of their feet. There are some, however, that travel through the air. This field of transportation was exploited by spiders long before man became interested in its value.

The purpose of this airborne travel is thought to be a means whereby the species can be spread over a wider area. After climbing to the top of a high object, such as a fence post or rock, the spider elevates the abdomen and starts spinning a mass of threads through special organs known as spinnerets. When this mass becomes large enough to create sufficient wind resistance, the spider lets go of the object on which he is sitting and becomes airborne. This may not be as fast or as comfortable as our luxury airliners, but it is effective. Spiders, in transit, have been spotted by ships several hundred miles out at sea.

Spiders reproduce by laying eggs. In most species the eggs are very well protected by a coating of silk called the egg sac or cocoon. Each species that uses an egg sac has an elaborate design used in constructing this container. Quite often it is as easy to identify a species by the egg sac as by studying the spider itself.

Many spiders, after preparing the eggs and fastening them to some object, die and leave the young spiderlings to care for themselves after they hatch. Other species carry the egg sac around until hatching occurs and then care for the young.

Spider eggs usually hatch soon after being laid and the young spiderlings leave the egg sac. Some spiders, however, remain in the egg sac for a long period of time after hatching. The species that hatch in this manner usually lay their eggs in autumn and the spiderlings spend the winter within the egg sac. It is possible for a spider with a longevity of one year to spend almost one half of this time within the egg sac.

Many hours of pleasure can be derived from observing web-building spiders. The complicated patterns are interesting and represent a large amount of labor by the spider.

Growing spiders shed their skin, or moult, at regular intervals. When the skin starts to harden it cannot expand sufficiently to allow for normal growth of the spiderling. When this occurs, the outer skin splits and is cast off. A new layer of skin thus develops to allow for the increase in size.

Evidence seems to indicate that if a spider loses a leg early enough in life, it will grow a new leg which will function in place of the old one. Once the wound heals, the bud of a new leg appears at the next moult. This bud increases in size with each moult and, if started early enough in life, a useful leg will develop.

It is hoped that this short discussion will help any reader who is suffering from a spider malady to better appreciate and more readily accept the spider into his everyday life. Actually, the spider offers many hours of interesting relaxation to the person who will devote his time to observing it. If you doubt this, spend some of your leisure time watching a spider build its web. Learn to identify the one poisonous species and thus dispel your fear of the others. In doing so you will be contributing a service to the group of naturalists and entomologists who are trying to cure the world of that widespread affliction—"spideritis."

Grounded!

Prior to molting, ducks and geese fly to bodies of water where they feel safe from land enemies. They do this because they molt their primary feathers all at once and, for a short period, cannot fly.

SAFETY IS SENSIBLE

By COMMODORE CLAY CLIFTON,
United States Coast Guard
President, Water Safety Congress

Game Commission Photos by Kesteloo

Wholesome recreation is essential to our American way of life. Care must be exercised, however, to prevent a large number of needless drownings.

SPRING is a time of change. The dull, drab and dead surroundings of winter turn into the bright green of spring's new growth. It is fine to be out-of-doors and a part of the new awakening of dormant life in field and forest, lake and stream. Spring is a grand time to be alive—yes, alive!

Please take that "being alive" both literally and figuratively, because the Water Safety Congress is vitally concerned with drownings. Spring, we realize, also marks the beginning of the heavy usage of lakes and streams for recreational purposes, and statistics prove that all too many people will drown before 1957 is out.

The Water Safety Congress in reality is the result of a problem, a big one. This problem, that of drownings, still is with us.

Water, like fire, is one of man's greatest blessings. Water, in fact, is a necessity of life. Yet, also like fire, it must be handled with care and respect. It can, and does, cause damage and loss of life.

People probably will drown as long as they work and play on the water. People living along sea coasts and near the Great Lakes, however, know and respect the water. Water wisdom has been passed along from generation to generation and drownings are held to a minimum.

Creation of new, huge lakes in the South by federal governmental agencies and private groups since the early '30s, however, has presented a new problem. Inland peoples suddenly were given access to new and great water areas without the benefit of safe utilization of them. Almost simultaneously, people found themselves with more leisure time, greater incomes than prevalent during the "depression daze," improved modes of transportation and other incentives to use these lakes for fishing, boating, hunting, picnicking, and a multitude of other recreations. Without the benefit of experience, many people were reckless and foolhardy. The result was a sudden upsurge in drownings—and the creation of the Water Safety Congress.

Efforts of the Water Safety Congress are largely educational in nature and it is difficult, if not impossible, to evaluate them. Who, for example, can say how many people were saved from watery deaths by instructions they read, heard or saw as a result of information distributed by the Congress or the hundreds of interested people comprising it?

The picture isn't entirely dark. Cold statistics indicate progress is being realized and for that we can be encouraged. All too often we regard each drowning as the separate tragedy it is without regard to the over-all picture.

The National Safety Council reports that the number of drownings as related to population is declining! The average number of annual drownings in the U.S. for the years 1903-12 was 9,000, or a rate of 10.2 per 100,000 of population. By 1948, the number of drownings had declined to 6,500 for a rate of 4.5. In 1954, the number was 6,200 for a rate of 3.9. This record, it should be pointed out, was achieved despite the creation of many new water areas enjoyed by a population with more and more leisure time. Were it possible to calculate the drowning rate on a usage basis, the decline in drownings probably would be even more striking than the previously quoted figures indicate.

What is the answer? The Water Safety Congress believes a strong, sustained educational program will produce the best results.

It would appear that local organizations should be best fitted to combat local problems. Most communities, for example, have local representatives of organizations al-

Before leaving the pier in an outboard, all occupants should be provided with life jackets. A precaution such as this may mean the difference between life and death.

In case a boat overturns or fills with water, the occupants should stay with it. Most boats, even if they are almost full of water, will continue to support some extra weight.

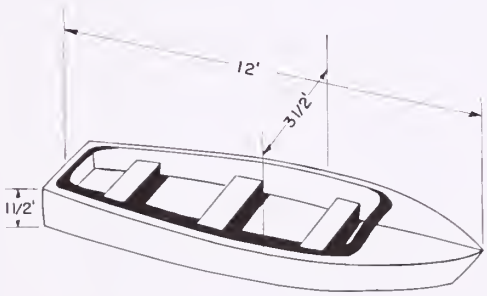
ready embarked on water safety programs on national, regional or state scales. These groups are the American Red Cross, Boy and Girl Scouts, Outboard Boating Club of America, recreation departments of city or county or state governments, the U.S. Coast Guard and its Auxiliary, U.S. Power Squadrons, Boys' Clubs, YMCA, YWCA, YMHA, schools and colleges, etc. With members of these organizations as a nucleus, a water safety program can be developed using participation of such other interested groups as community safety councils, civic clubs, conservation and/or game and fish departments, police and fire departments, federal agencies, news media such as press, radio, TV, etc. Once such a local organization is functioning, there is much it can do in the way of presenting demonstrations, developing learn-to-swim campaigns, practicing rescue methods, preparing and distributing literature and even considering suitable legislation, if deemed necessary.

A formidable list of "do's" or "don'ts" can be used as guides for water safety. Actually, however, these rules boil down to the use of plain old-fashioned common sense. After all, safety is sensible!

KNOW THE CARRYING CAPACITY OF YOUR BOAT IT MAY SAVE YOUR LIFE

THIS BOAT HAS A SAFE CAPACITY OF 473 POUNDS

$$\left(\frac{12 \times 3.5 \times 1.5 \times 0.6}{12}\right) 150$$



REMEMBER — Make adequate allowance for the weight of your motor and equipment.

HERE'S HOW TO COMPUTE IT

Length times maximum width, times maximum depth, times 0.6 divided by 12, multiplied by 150, except where the beam measurements are 48", use 19" as maximum depth; 49" to 52", use 20" as maximum depth; 53" to 56, use 21" as maximum depth; 57" or over use 22" as maximum depth. (Outboard Boating Club of America Formula)

Water Safety Congress Drawing

Virginia's Deer, Bear and Turkey Kill for 1956-57

By CHESTER F. PHELPS
Chief, Game Division

CONFIRMING pre-season predictions, the statewide harvest of deer rose to an all-time high, a figure almost double that of the 1952-53 season when 10,867 were taken and close to twice the number bagged only three years ago when 11,807 were checked. This remarkable increase illustrates what game biologists have been pointing out for years—that it is possible to harvest antlerless deer season after season without reducing the take of antlered bucks. Essentially this means that when the herd has reached a size in balance with the average year-around food supply, it can be maintained at that maximum by annually harvesting a number of deer equal to the number born each spring. This in turn indicates that does and bucks must be harvested in approximately equal numbers as they are born in this ratio. There is, of course, a limit to the number of deer that can be produced and harvested in any county and this varies according to the quality and quantity of range. In some counties, particularly in the western part of the state, this limit has already been reached and in several, such as Shenandoah, Bath, Augusta, Wise, Scott and others, exceeded. In these counties sportsmen should not expect constantly increasing kills.

For the third successive year the statewide kill of bear declined. Again, bear were not common in their traditional western haunts probably due to another shortage of the important mast food supply. This is shown by the reduced kill in counties west of the Blue Ridge and an increased kill in those counties on the eastern slope of the ridge. Because of this and other reasons the bear is currently receiving special attention from Commission game biologists.

While there was a decline in the number of wild turkeys checked throughout the state, this season's kill compares favorably with the take of the past several years. Current studies indicate nesting success may be primarily responsible for the yearly fluctuations in the turkey population. There can be little doubt that the nesting period is a most critical time in the life cycle of the turkey. Unfavorable natural conditions, such as flood or fire, over an extended area will be quickly reflected in the following fall's population.

Big Game and Turkey Kill

County	1954—55			1955—56			1956—57		
	Deer	Bear	Turkey	Deer	Bear	Turkey	Deer	Bear	Turkey
Accomack	10			7			9		
Albemarle	69		52	93	1	53	83		43
Alleghany	162	13	18	221	2	79	288	2	22
Amelia	85		68	72		116	66		133
Amherst	61	11	11	59	4	10	53	10	13
Appomattox	58		46	63		73	53		33
Augusta	1,103	80	82	662	25	84	1,028	19	78
Bath	1,185	19	145	928	12	236	1,528	1	187
Bedford		4	7		2	11		13	7
Bland	46	7		35	4		32	4	
Botetourt	113	20	15	156	10	15	232	14	23
Brunswick	17		31	40		69	24		67
Buckingham	240		139	316		173	274		121
Campbell			24			25	17		24
Caroline	762		71	939		115	1,248		98
Carroll	3			10			10		
Charles City	407			491			566		
Charlotte	20		53	12		64	14		70
Chesterfield	103		94	107		83	99		100
Clarke	13			23			35		
Craig	216	5		282	6		402	1	
Culpeper	49		29	72		24	55		17
Cumberland	68		66	86		95	97		34
Dinwiddie	78		82	100		109	96		114
Essex	125		10	124		8	155		8
Fairfax			3			7			11
Fauquier	23		38	58		37	51		34
Fluvanna	44		34	42		30	53		32
Frederick	590	1	37	567		42	1,068		45
Giles	236			223			365		
Gloucester	52			39			49		
Goochland	48		19	49		33	44		18
Grayson	201			242			373		
Greene	8			8			13		
Greensville	53		19	52		29	60		22
Halifax	177		69	96		96	75		78
Hanover	68		19	54		23	40		14
Henrico	30		5	24		12	24		6
Highland	208	5	45	213	1	64	427	2	74
Isle of Wight	92		2	63		4	100		
James City	282		13	368		21	523		8
King George	71		14	73		14	95		
King and Queen	164		13	193		18	173		20
King William	258		22	279	1	21	256		29
Lancaster	24			39			34		
Lee	14			21			18		
Loudoun									
Louisa	71		28	70		40	53		39
Lunenburg			25			32	12		26
Madison	4			6			3		
Mathews	27			33			30		
Mecklenburg	7		20	6		38	10		37
Middlesex	17			16			23		
Nansemond	160	12	1	160	25	2	224		
Nelson	45	7	23	71	10	42	65	22	4
New Kent	253		31	325		31	478		51
Norfolk	378	4		379	22		529	5	
Northumberland	10			34			23		
Nottoway			24			34	38		38
Orange	28		52	57		71	52		54
Page	198	4	4	131	5	7	334	5	1
Pittsylvania									
Powhatan	55		37	91		63	83		61
Prince Edward	19		22	26		55	11		31
Prince George	345		35	219		58	444		79
Princess Ann	9			14			16		
Prince William			36	9		36			67
Pulaski	2	2		2			2		
Rappahannock	4			14			32		
Richmond	49			47			63		
Roanoke	13			12			18		
Rockbridge	126	22	57	153	11	54	228	9	39
Rockingham	462	45	17	469	8	27	896	22	20
Russell	7			7			5		
Scott	183			106			96		
Shenandoah	1,381	2	46	1,052	4	43	2,817	1	22
Smyth	357			692	3		505	3	
Southampton	424	1	19	398		34	581		24
Spotsylvania	83		77	78		95	80		105
Stafford	80		43	95		25	101		58
Surry	297		33	243		48	270		60
Sussex	285		50	166		56	253		57
Tazewell	49			42			22	2	
Warren	195			158			385		
Warwick	273			348		1	216		
Washington	91			97			156		
Westmoreland	41			46			36		
Wise	141			98			65		
Wythe	78	6		87			117		
York	280		7	569		12	1,182		14
County Total	14,163	270	2,082	14,227	156	2,797	20,859	135	2,470

U.S. Forest Service Photo

The fall of 1952 will be long remembered by many people in eastern United States. Thousands of acres of valuable forest and wildlife land were reduced to ashes through man's carelessness or by deliberate intention.

FOREST FIRE MANIA

By B. A. EGER, *District Forest Ranger*
George Washington National Forest

THE DAYS were unseasonably warm for late October and early November. It had not rained for days on end. Before most of the leaves fell, the sunny days of low humidity and drying warm winds sucked the moisture from the litter on the forest floor and deep out of the turf and subsoil. This situation prevailed in nearly all of the states in the eastern half of the country. When the forest floor reached "cured" conditions, it was tinder dry. Brisk winds pushed up the high fire danger and most brush and forest land was ready to explode with the first spark or flame.

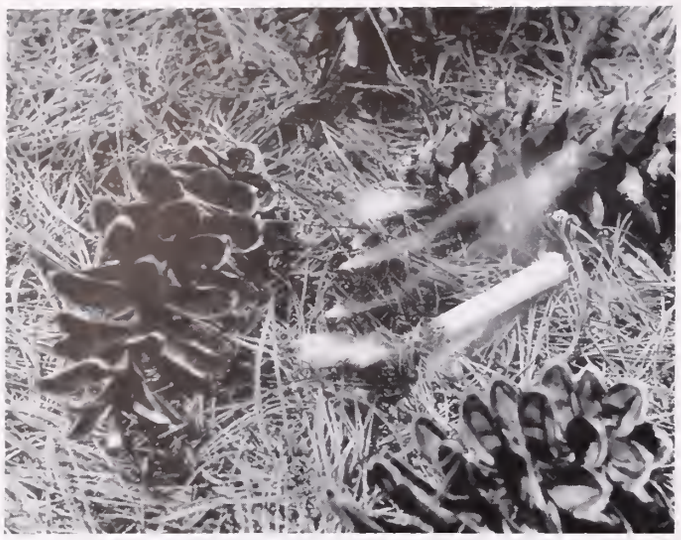
Suddenly, as if by some prearranged schedule, fires broke out all over the country; smokers' fires, hunters' warming and camp fires, grudge fires, incendiary fires—all from man's carelessness and cussedness. The air over the country became a pall of thick smoke haze that hid the sun except for brief glimpses, which showed it to be blood red and ominous.

Riding along on prevention contact work and patrol, I could not refrain from thinking about all this destruction and wonder if there is really a solution. We go along fire season after fire season with a few small fires and begin to think we have the general public fire-prevention conscious and the situation pretty well in hand. Then along comes a protracted spell of dangerous fire weather and state after state experiences numerous outbreaks of fire in its woodlands and forests. Many of these become large areas of devastation. I wonder why.

The answer is not so simple. Of course weather conditions are the one factor that prepares the forest for this terrific combustion. But, with the exception of the lightning fire, human beings cause the fires to start. Here in the East, if we had only lightning fires our fire occurrence would be mighty small and our problem simple.

I have seen long dry spells in the spring and summer when the forest was highly inflammable, yet our number of man-caused fires was relatively small. The forests were visited by the average number of persons who carelessly discarded butt or match, burned debris, or left an open fire, but there was no holocaust such as spread through the eastern United States in the fall of 1952.

The point is, the situation was aggravated that fall by the many fires that were apparently incendiary. What were the motives for this outbreak of incendiarism? In some of the areas industrial workers were on strike.



A discarded cigarette butt, though small in size, is capable of starting a fire which may develop into a major catastrophe.

Hunters are usually very careful with their smokes and campfires. The majority realize the importance of keeping fires out of our forests and fields.

Did some set the woods on fire to get work on suppression crews? Did they act from a general feeling of frustration and resentment? In some areas resentment mounted against the closing of hunting because of the hazardous condition of the forests. In fact, two men caught at incendiarism gave that as their reason.

A great deal of spectacular publicity was given to forest fires during the fall of that year—in the press, in movie house news reels, by radio and television. At the same time the predictions of continued dangerous weather and the smoke pall that hung over the country added to the tension of nerves. Possibly this had a psychological effect on some to develop pyromaniacal tendencies, inciting them to incendiarism.

What is the solution? We increase our fire-prevention program each year and apparently reach more of the general public. How can we cope with the relatively small percentage of people who cause these epidemics of forest fires when conditions reach the critical stage? The problem challenges our ingenuity and calls for considerable planning and action.

So far as the sportsmen of Virginia are concerned, I have found the vast majority of them careful and cooperative about forest fires. Considering the large number of hunters and fishermen who use Virginia's forest land—private, state and federal—the fires caused by these groups are few. We have had and do have grass, brush and woods fires caused by hunters and fishermen, and it is the occasional offender who spoils the good record and endangers the good hunting and fishing. As a group, however, the sportsmen have set a record which tops the list for fire prevention and the desire to conserve our natural resources—soil, forest, water and wildlife.

LEADERSHIP IN CONSERVATION (Continued from page 7)

but to the task as a whole. The people expect it to be done and the people themselves have in fact shown ways in which it can be accomplished.

We need only mention the Muskingum Conservancy District, the Salt-Wahoo Watershed Association, and the public land committee of the National Association of Soil Conservation Districts to remind ourselves that the largest and most complex federal and state agencies can be brought to work together in the public interest.

The Congress should act to provide general guides for achieving coordination. Earlier this year the Society established an objectives committee, which has already stated the need for coordination of governmental conservation activities and suggested ways and means by which the Society may promote it.

The Conservationist's Responsibility

In summary, let me say that the professional conservationist, regardless of what specialized phase of conservation he may represent, has an ethical responsibility to think and perform beyond his daily task and his particular specialized function. He must relate his work to the work of others and to the economic and social consequences of his actions. Those responsible for his training can help prepare him to do this. Those responsible for our laws and for the administration of resource programs have an obligation to establish the kind of working environment in which he can exercise such broad performance.

And the Soil Conservation Society of America must assume its share of responsibility. Among the many things the Society can do, I urge that we vigorously promote:

(1) Improved professional training in natural resource management, and

(2) Comprehensive policies for care and use of natural resources for the states and the nation.

It is my hope that by such means our Society may further develop professional leadership in conservation.

SHENANDOAH*

WANT to escape the heat? If you live in the sweltering cities of the East one of the finest ways to do it is to load up the wife and kids in the family car and head for Skyline Drive in Virginia's Shenandoah National Park. It was 96° in the shade in Washington the day we loaded up the five boys and headed for the Blue Ridge Mountains. That night we slept under two blankets in our cabin at Skyland on top of the ridge after enjoying a fire in the fireplace. The temperature dipped to 62° by midnight. Needless to say, we cooled off in a hurry.

The beauty of Shenandoah National Park is its handiness. It is only 24 hours away for 70 million people, and park naturalist C. Kenny Dale told us that over one million people a year who visit the park have already found that out. The park comprises 193,500 acres in the highest and most scenic section of the northern Blue Ridge range. It extends from Front Royal on the north to the vicinity of Waynesboro on the south, an airline distance of 75 miles. The Blue Ridge Mountains, running generally in a northeast southwesterly direction, rise abruptly from the Shenandoah Valley, forming a western escarpment and reaching a maximum elevation of 4,049 feet at Hawksbill Mountain. The rise on the Piedmont, or eastern side, is more gradual and numerous spur ridges and foothills extend eastward from the crest of the range. Between these spur ridges, deep forested hollows are drained by turbulent mountain streams which form waterfalls of varying heights. Many of the hollows and ridges may be reached by trail.

There was quite a rumpus in some quarters when it was first proposed to build the scenic drive that today traverses the entire length of the park along the crest of the mountains for 105 miles. It was a new idea. But public acceptance and use of the skyway has proven that the National Park Service, as usual, knew what it was doing. Today the drive has been extended on the Blue Ridge Parkway all the way to Great Smoky Mountains National Park in Tennessee.

For young people and adults alike, one of the fine features of a stay at Skyland, Big Meadows or one of the park camping areas is the splendid naturalist program. Their first night at Skyland, the boys attended a campfire program where naturalist Maynard Bowers gave an illustrated talk on the park during the various seasons of the year.

The next day they went on a nature hike where they learned some interesting things about the park's forests and wildlife. Ninety-five percent of the park supports a forest cover which is predominantly oak, Mr. Bowers said. In addition, there are hickories, black locusts, black gums, maples, American lindens and walnuts. Along stream courses may be found birches, tuliptrees, American sycamores and elms. There are also a number of evergreens including pine, red spruce, Canada hemlock, eastern redcedar, Canada yew and balsam fir.

The Skyline Drive, for the most part, passes through forests which prefer moist soil. The most notable exception is the dry soil forest in the south section of the park.

*From *American Forests* magazine, with special permission.

Quotes From *The Fisherman* Magazine

Macaroni, noodles, spaghetti, cheese, sweet corn, bread, blueberries, shrimp, liver and bacon all make good fish baits.

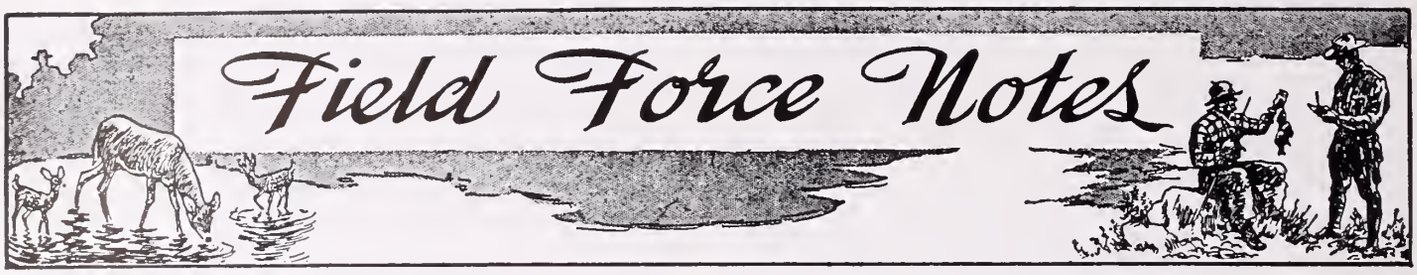
Fish can detect sound vibrations from 35 cycles to nearly 9,000 cycles per second.

In swift water, wade with shuffling steps, legs spread wide and body parallel to the current for less resistance.

The relatively sparse food supply in most trout streams limits the effectiveness of natural propagation.

The best place to find cover in an electrical storm is in your car.

One sign of an approaching storm, especially near the ocean or salt water, is a sudden clearing of a hazy atmosphere.



Captain Ed Doughty, Game Warden, Passes

Edward J. Doughty, Jr., game warden of Northampton county, died of a heart attack on March 25, while on duty. He was 62 years old, and had been with the Commission of Game and Inland Fisheries since September 1929. Prior to this time, he

Captain Ed Doughty, warden of Northampton County for the past 28 years, died of a heart attack March 25, while carrying out official duties.

was game warden for the Eastern Shore Game Protective Association.

In charge of the "Colonel," a 40′ Commission boat and the 20′ "Wheeler," he did extensive patrol work in the marshes of Eastern Shore. Cap'n Ed was well known to Northampton residents and will be greatly missed by his many friends in that area and by his friends and co-workers at the Game Commission.

Warden Retires

The residents of Spotsylvania county and the city of Fredericksburg will miss the services of P. Blake Lewis, who has been the game warden in that area for 30 years. He retired from service with the Game Commission on February 1 of this year.

Prior to his game warden job, Blake spent seven years as Commissioner of Revenue in Spotsylvania county.

He enjoys working with tools in his home workshop and considers this type of recreation his hobby. Most of his spare time will be devoted to making reproductions of antique furniture.

Wild Turkey Study

Jack Gwynn, assistant game research biologist, has begun a statewide campaign on the study of the reproductive habits of the wild turkey. He has enlisted volunteer help from sportsmen and conservationists all over Virginia. It is necessary, in order to have a complete report, to make brood and nesting reports in each county every month, until September.

Two types of report cards will be returned by these interested observers to the game division of the Commission of Game and Inland Fisheries, 7 North Second Street, in Richmond, Virginia for the final analysis compilation. One is the turkey brood report, and the other, the nesting report. No postage is required for the mailing of these cards, and as many cards as are needed will be provided for anyone willing to help with this study.

44 Deer Trapped in Two Weeks

Game biologist J. W. Engle reports the following deer trapping success in Bath County this year.

"We had planned to trap deer on the Gathright property in September. With that in mind the traps were set up in August, but August proved to be too late to get the deer in the habit of coming into the traps for salt to try fall trapping. Nor would the deer take the bait at that time. So trapping plans were postponed until last winter when we figured the deer would be hungry due to the lack of mast this past fall.

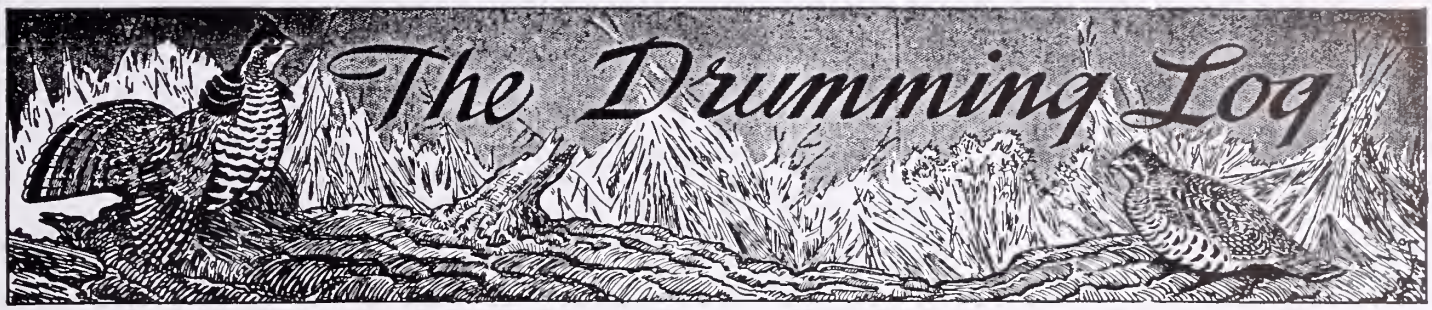
"Game manager Gratton Fisher started baiting right after the first of the year. Frequency of baiting was stepped up over a two-week period as it appeared that the deer were taking the bait. By the 15th, I could see that we should be trapping. It was cold (down to zero and the deer were eating 100 pounds of corn a night), and the ground was frozen to make transportation easy. We caught 44 deer; thirty-seven were shipped to Wythe county. All bucks were released when caught because of the difficulty of transporting bucks with does and fawns. There should be enough bucks in the fawns taken to fill the requirements for breeding next year.

"Our best catch was three deer in one trap. In the trap a doe and a big fawn beat a little fawn into the mud until he could not move. We took out the doe and the healthy fawn. I thought the fawn lying on the ground was almost dead. I lifted the door to go in and drag out the poor little fellow. As I rolled him over, he decided that he did not like me and took off. The last we saw of him he was hightailing it up Bolar Ridge as fast as any deer could go.

"The area is well away from our management units and without the

Commission field personnel loaded each of these captured deer into transporting crates. The deer were moved into potential deer range which was presently understocked.

help and splendid cooperation of all the game managers concerned, the trapping could not have been a success."



Alexandria Sewage Treatment Plant Dedicated

On December 14th, dedication ceremonies observed the completion of the Alexandria sewage treatment plant. Commenting on this in its official news letter, the Interstate Commission on the Potomac River Basin said: "To those in the habit of associating dedications only with magnificent public buildings or with shrines in honor of the great men of history, we have this to say; the Alexandria treatment plant has made as significant a contribution to the beauty of our national Capitol as any shrine you might care to name. The Potomac River is Washington's mirror. For better or worse, it is an integral part of the setting for Washington's monuments and public buildings."

Very well put, we think. For the layman who might conceivably be amused at the thought of "unveiling" a sewage plant, it would be worth while trying to visualize what effect the Potomac would lend if it ran its entire course polluted and choked with filth . . . virtually on the doorstep of our Capitol. Aside from a primary concern of public health, such a condition would hardly serve to enhance the picture.

No Such Thing as a Supersonic Insect

At a meeting of the American Association for the Advancement of Science in New York, Dr. Brian Hocking, professor of entomology at the University of Alberta, lent some interesting insight on insects and exploded current myths in circulation concerning the rate of speed which some species are capable of attaining.

No insect in existence today, said Dr. Hocking, is capable of flying faster than 27 miles per hour in level, continuous flight, or 35 miles per hour in short bursts. He reached this conclusion by measuring the power required by a number of insects in flight, their capacity for nectar as fuel, and their efficiency.

Insects, the doctor explained, are the only invertebrate animals that have learned to fly, and they first acquired the knack about 300,000,000 years ago, probably by climbing up "emergent aquatic vegetation" and then gliding down from such elevations. Insects pioneered flight among the animals, for at least 100,000,000 years passed before the vertebrates, the reptiles, birds, and flying mammals, followed into the air. Ironically enough, when they did their diet soon consisted primarily of insects.

Some of the more exaggerated stories built around insect flight through the years were accordingly exposed at the Association's meeting. A good example is the deer fly which, according to one observer, can be clocked at 820 miles per hour! Too, a conventional aerodynamic theory in France argued that by all scientific rights, a bumble bee just isn't able to fly at all! Quite a few people could argue right back on that one.

Fearnow Promoted

Ted Fearnow of Berkeley Springs, West Virginia and Philadelphia, Pennsylvania, chief of wildlife management operations in region 7 of the U. S. Forest Service for 15 years, has been promoted to assistant regional forester at Upper Darby, Pennsylvania.

Mr. Fearnow has served with the Forest Service since 1935. His new job will be chief of the Division of Education and Information for the Eastern Region, which includes 14 states from Maine to Kentucky.

Since 1942, Fearnow has been working in the fields of range management, wildlife management and forest recreation planning. During this period, he has been instrumental in the development of cooperative wildlife management programs between the Forest Service and many of the eastern states. Under this program, millions of acres of national forest land are being developed and managed as public hunting and fishing grounds.

Wild Animals Are Wild

This story is an excellent example of why wild animals should not be picked up for pets. A Jackson, Michigan, family recently spent several anxious weeks waiting for medical tests to determine if their four children, bitten by a fitful raccoon, were infected with rabies. Conservation officers advised that picking up the coon was against the law in the first place but, after he had bitten the children, the only course was to keep the animal under observation for rabies and to proceed with the painful rabies shots for the children. The anxious experience charged a high price in worry, time and expense. It could have been avoided simply by leaving the animal alone, as state law clearly suggests. The raccoon died soon afterwards, though not from rabies.

In Virginia, there is no provision by which any game species may be held as a pet. The Commission's policy in regard to captive game has evolved through many years of study and experience. In most cases the pet is not benefited by a prolonged period in captivity. With the return of spring and young animals, our best advice is—leave wildlife alone. Enjoy it from a distance.

Operation Outdoors

Forest Service officials predict that by 1962, recreation-bent citizens will pay 66 million visits to our national forests. Looking forward to this with mixed emotions, the Department of Agriculture has come up with "Operation Outdoors," a plan designed to double recreational facilities on the forests in the next five years.

The program will concern itself with two major problems: (1) an ever-increasing participation of families in outdoor activities and (2) the improvement and management of wildlife habitat. In January, the Department had released information only on the first phase of the program, which calls for the construction of some 2,150 new camping and picnicking grounds and the repair and modernization of existing park facilities, including tables, fireplaces, sanitary facilities, etc. At present, there are 4,900 camp and picnic grounds with accommodations for 41,400 families. The new grounds are expected to, and virtually must, accommodate 40,500 additional families.

Other even more serious problems have arisen. Persons unable to enjoy the established but over-crowded camp areas are taking advantage of nature in spots where there are no fireplaces or sanitary facilities. Thus the threat of forest fires is increasing and streams that supply water to nearby towns and cities are in danger of becoming polluted.

In 1946, recreation visits to the national forests were in the amount of 18.2 million; in 1955 they hit an all-time high of 45.5 million. This will offer some idea as to the expediency of Operation Outdoors. As Chief of the Forest Service, Richard E. McArdle, said, "Our existing facilities simply can't handle the load!"

"What Every Parent Should Know"

Just off the press of the Sporting Arms and Ammunition Manufacturers' Institute is a little booklet that many adults will want and that even more should have. It is entitled "What Every Parent Should Know When a Boy or Girl Wants a Gun," and it tells them precisely that. The fifteen most frequently asked questions concerning firearms and youngsters are answered specifically, clearly, and intelligently by the Institute and a nationally known gun editor. Parents armed with this booklet need have no fear arming their youngsters with a rifle or shotgun.

Free copies are available upon written request from the Sportsmen's Service Bureau, 250 East 43rd Street, New York 17, New York. It might well be that you could save a life by being well informed.

"You should have seen the one I got away from."

News Leader's Editorial Complimentary

In the last issue of *Virginia Wildlife*, there was an article entitled "Some Bear Facts," which was written by Elmer Richards, district game biologist, of Harrisonburg, Virginia. In a two-column story on the editorial page of the *Richmond News Leader*, the article was paraphrased and praised. The editorial concluded by giving Richards and the magazine a boost, to quote: "So now you know about bears. For further details, consult Mr. Richards' article in *Virginia Wildlife*—a nicely turned article, by the way, in a very nice little magazine."

"Educated Mouse" . . . an Invaluable Animal

The Fish and Wildlife Service has at long last discovered a way to keep mice from eating newly planted seedlings and making themselves multi-million dollar nuisances. They're educating them . . . the hard way.

After extensive field tests, Fish and Wildlife workers found that coating the seeds with a nonlethal amount of toxic chemicals prior to planting effectively discouraged the average mouse by giving him a severe stomach ache and quickly teaching him not to partake of that particular fare again. There is another factor involved, too, which depends upon an instinct in most animals to protect their feeding grounds from any threat of invasion. Thus, in combination, the two control measures serve to "educate" the mice and at the same time leave them vigorous enough to repel ravenous and uneducated outsiders.

It's working fine and should prove of great value in reforestation programs and to lumber enterprises in their long-range timber harvesting plans.

Food Patch Contest Well Received

A report in from district game biologist Jim Engle, Jr., in Staunton, has it that the food patch contest at Effinger's Rockbridge County School enjoyed enthusiastic and widespread participation.

The contest, part of an over-all effort to educate and promote interest among Virginia's school children in soil and wildlife conservation, offered a variety of prizes to those boys who could produce the best food patch for wildlife. The Game Commission furnished the seed used and the Soil Conservation Service distributed it to the schools. Money for the awards was provided by the board of supervisors from the county damage stamp fund.

Winners were: Teddy and Tommy Brown, of Effinger, 1st place, awarded a .22 caliber rifle; Calvin Cummings, of Effinger, 2nd place, awarded a fly rod and reel; Clinton Anderson, of Effinger, 3rd place, awarded a casting rod and reel; Henry Watts, of Brownsburg, 4th place, awarded field glasses; Jimmy Petty, of Goshen, 5th place, awarded a camera; Wendel Bane, of Effinger, 6th place, awarded a pen and pencil set; Henry Hatcher, of Effinger, 7th place, awarded a wallet; Billy Dixon, of Effinger, 8th place, awarded a pocket knife. The awards were made by Earle Edwards, of the Soil Conservation Service.

Six of the eight winners were members of the Effinger FFA Club.

Wildlife Questions and Answers

Ques.: **A fellow worker recently told me that angleworms could be conditioned and made much tougher for use as bait. Is this possible?**

Ans.: There is a method prescribed whereby worms can be conditioned for better use as bait.

Place fine sand in a box three by three feet. In the center of the sand, place a ball of dampened moss from which the dirt has been removed. Dig the worms and place them beneath the surface of the sand. After a period of time the dirt will be removed from within their bodies and sand will replace it. After a week of living in the sand, the worms will shrink in size and become extremely tough. Their color changes to pink and seems to make them more attractive to fish.

Ques.: **What is meant by the word "smutting" in relation to trout fishing?**

Ans.: This is a word seldom used in Virginia. Smutting refers to a type of rise in trout with which it is most difficult to deal. The smut is a rise that usually takes place in still-water stretches of trout streams during the hot summer months. The fish feed on minute creatures in the surface film of water, and the tiny rings made on the water surface are the result of the fish gently sucking in these small insects.

Ques.: **What is the most popular tackle used in shad fishing?**

Ans.: The type tackle used for shad fishing is purely a matter of choice. Each fisherman has his own particular combination of tackle for shad. However, the most popular combination is probably a lightweight spinning rod and a four-pound monofilament line. The lures range in weight from 1/20 ounce to ¼ ounce.

Ques.: **Do you have information available on the techniques of raising bait fishes?**

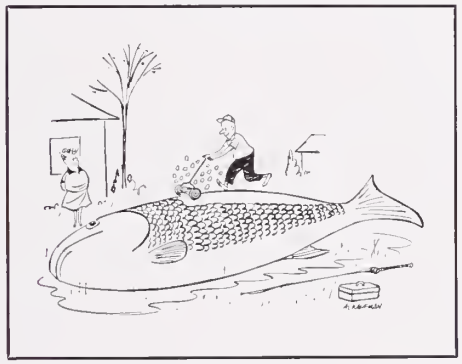
Ans.: The best source for obtaining information on bait fish culture is the booklet, "Raising Bait Fishes." This may be obtained for a small charge from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Request circular 35. This publication covers the feeding and handling of the fish as well as the design of rearing ponds.

Ques.: **Each year during the "shad runs," gates are constructed in a stream near my home. The so-called sportsmen dip these helpless fish by the thousands. How do we manage to keep a population of shad if they must go up these streams to spawn?**

Ans.: Perhaps the answer to your question lies in the fact that the roe shad (female) lays from 25,000 to 30,000 eggs. There are cases on record where this number has gone as high as 100,000 to 150,000. Some of the females will get past the nets and barriers and such heavy egg production is probably the key to the shad's survival.

Ques.: **Will the oyster drill attack animals other than the oyster?**

Ans.: The oyster drill will add variety to its diet in the form of mussels and barnacles. Evidence of cannibalism has also been found in this species. The drill is perhaps the most serious problem facing the oyster industry at this time.



Ques.: **When do fish feed the heaviest?**

Ans.: It seems that fish feed more during the spring and late summer or early fall. In spring, after a period of little activity in the cold months, they are hungry. During the fall they may feed heavily in order to store energy for the cold months ahead.

Ques.: **Last winter while in Florida we were amused by the large number of fish eaten by the pelicans. Has anyone ever figured the amount of fish eaten by the bird during the course of a year?**

Ans.: Figures on the annual consumption by the pelican in Florida are not available. However, a species of pelican found in Africa is believed to consume approximately one ton of fish annually.

Ques.: **What is the oldest-known method of fishing? Is this operation still being used today?**

Ans.: The earliest-known method of catching fish, other than with the bare hands, involved the use of spears. These spears, with many improvements, are still used by many people in foreign lands. In this country, sport fishermen employ spears for the taking of rough fish from many streams.

Ques.: **I have heard that whales can stay submerged for extremely long periods of time. Could you give me some information on this subject?**

Ans.: Figures available on whale diving periods come from Norwegian whaling stations. These times run from five to six minutes for the finwhale to 30 to 45 minutes for the sperm whale. It seems possible that the bottlenosed whale may be able to stay submerged for a period of two hours, which is quite a long time.

Ques.: **If the food of a hatchery fish is varied, will it have any effect on the natural colors of the individual?**

Ans.: It has been found that hatchery trout can be given various foods, which tend to make them similar in color to their wild relatives. The addition of alfalfa meal or paprika produces yellow and orange coloration of fins and body in certain trout, while it produces orange spots in a different species. It appears that coloration can be manipulated, to some extent, in hatchery trout.

Ques.: **I have heard that the raccoon will not touch meat unless there is water nearby in which it may be washed. Is this true?**

Ans.: Let us say that the 'coon prefers to have water in which to submerge his food. However, if there is none available, Mr. 'Coon will usually partake of food without first dipping it in water.

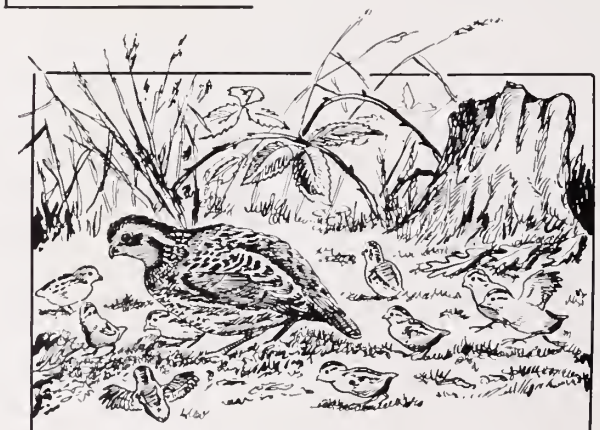
Ques.: **I recently read an article in which the author mentioned a "popeyed" trout. What is meant by this word?**

Ans.: "Popeyed" refers to a condition, usually in trout, in which the eyeballs are greatly protruded. There are several forms of "popeye," one of which may be caused by an infestation with the larvae of trematode worms. The larvae becomes encysted in the tissues of the orbit and cause the eyeball to protrude. Other forms may be caused by the collection of gases in the loose connective tissue surrounding the eyeball. A diseased condition of the kidneys may also cause this protrusion.

Wildlife's New Crop

Twins are rather common in the white-tailed deer family when quality food is plentiful. Most fawns are born in late May or June.

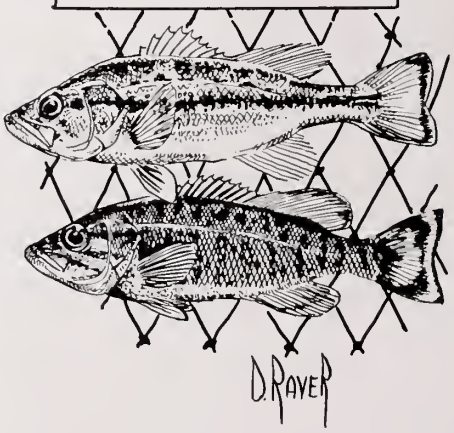
These young ducklings will be ready to fly in eight or nine weeks.



Although these young quail are as self sufficient as any birds of their age, to stray from the parent could mean sudden death.

Newly hatched largemouth bass stay in compact schools—

while their smallmouth cousins scatter in a very few days.



You would be lucky indeed to find the well hidden burrow of Mrs. Cottontail.

Help wildlife's new crop by keeping your pets tied during the nesting seasons.